

## 5.2 – The Pythagorean Theorem

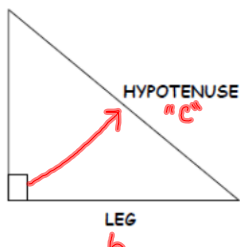
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- The Pythagorean theorem states that in any right triangle, the sum of the squares of the two legs equals the square of the hypotenuse.
- It is often written as:  $a^2 + b^2 = c^2$
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- Let's complete an example.
- Practice: Page 221 #1

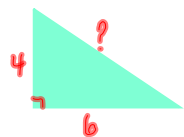
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Pythagorean Theorem

$(\text{LEG})^2 + (\text{LEG})^2 = (\text{HYPOTENUSE})^2$



Ex:

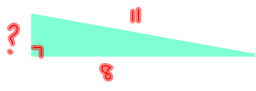


$$c^2 = a^2 + b^2$$

$$c^2 = 4^2 + 6^2$$

$$c^2 = 16 + 36$$

$$\sqrt{c^2} = \sqrt{52}$$

$$c = 7.2$$
  


$$c^2 = a^2 + b^2$$

$$11^2 = a^2 + 8^2$$

$$121 = a^2 + 64$$

$$-64 \quad -64$$

$$\sqrt{57} = \sqrt{a^2}$$

$$a = 7.5$$

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## Assignment

- Due: Friday, March 24/08
- Rest of class to work on it, rest to be done on own time.

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# Pythagorean Triples

- If the side lengths of a right triangle are all whole numbers, then these three lengths form a Pythagorean Triple.
- To test if three numbers form a Pythagorean triple, you square the three numbers and determine if the sum of two of the squares equals the third.

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## Pythagorean Triples

- For example:
- 3-4-5 is a Pythagorean triple since 3, 4, and 5 are whole numbers and  $3^2 + 4^2 = 5^2$
- Complete Check Your Understanding
- Page 224 #9, 11, 12, 13

$$3^2 + 4^2 = 5^2$$

$$9 + 16 = 25$$

$$25 = 25$$

✓

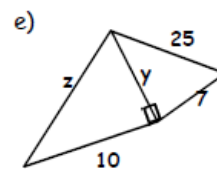
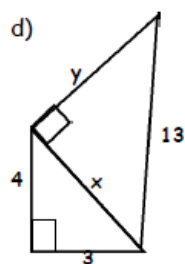
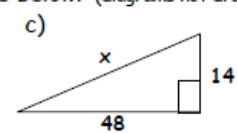
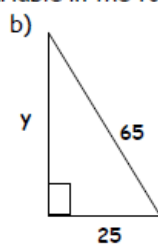
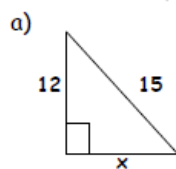
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1) Fill in the spaces in the table below.

Pythagorean Triple	Multiplied By ...			
	$\times 2$	$\times 3$	$\times 4$	$\times 5$
3, 4, 5		9, 12, 15		
5, 12, 13				25, 60, 65
7, 24, 25	14, 48, 50			
8, 15, 17			32, 60, 68	

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2) Determine the value for each variable in the following diagrams below. (diagrams not drawn to scale)



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